

Could boxing be banned? A legal and epidemiological perspective

Hugh Brayne, Lincoln Sargeant, Carol Brayne

For some time the BMA has campaigned for stricter legal regulation of boxing.¹ Although two bills in the House of Lords to outlaw boxing for reward were defeated in 1995, parliament has never declared boxing illegal and no court has ever decided a case involving the legality of boxing. We reviewed the case law and the scientific evidence to determine whether boxing could and should be banned.

Can law change without legislation?

Judges sometimes make new law when their old decisions are overtaken by changes in public opinion or where there is a gap in the law. It was judges, not parliament, who overturned the old rule that a man could not be convicted of raping his wife.² Sometimes judges accept help from experts when making law: the House of Lords relied on medical opinion on the quality of life of a victim of persistent vegetative syndrome before declaring it lawful to withdraw life sustaining treatment.³

The law and violence in sport

The deliberate or reckless infliction of an injury normally has two legal consequences: the aggressor has committed a criminal offence and the victim can



No court has ever decided a case involving the legality of boxing

Summary points

Scientific evidence shows that boxing—professional and amateur—endangers health

Courts have never been asked to consider scientific evidence against boxing, as no case before them has involved boxing

Two possible test cases could be considered in the event of a fight involving serious injury or death—a claim for compensation against the promoter or referee and a criminal prosecution presenting known scientific evidence

Even without legislation the law can place limitations on the sport

Since medical cover is a legal requirement at all boxing promotions, the profession could reconsider, in the light of its own ethical standards, whether members should participate

sue for compensation. We say “normally” because the law has always allowed exceptions. An assault can be legal because of consent—in the case of surgery, for example. Public policy can make an assault lawful or unlawful. For example “reasonable” parental chastisement and male circumcision are lawful. However, female circumcision is a criminal offence,⁴ and parents whose chastisement is excessive can—indeed now, must—be prosecuted.⁵

The relation in law between assault and contact sports is a matter of consent and policy. Public policy, as declared in case law, is that “properly conducted games and sports are needed in the public interest.”⁶ A rugby tackle carried out on a player who has consented to be involved is neither a crime nor a tort.⁷ But, as the box shows, there are limits to the sports violence which the law allows.

The law on violence in boxing

Boxing shares with other contact sports the fact that it has a set of rules. Contact and injury within the rules are consensual. Gross behaviour outside the rules, such as an attack on an opponent after the referee has

Sunderland Business School, University of Sunderland, Sunderland SR6 0DD

Hugh Brayne, professor

Department of Community Medicine, University of Cambridge, Cambridge CB2 2SR

Lincoln Sargeant, postgraduate student
Carol Brayne, lecturer

Correspondence to: Professor Brayne
hugh.brayne@sunderland.ac.uk

BMJ 1998;316:1813–5



Additional information is available on the internet

Beyond the rules of the game

- In *R v Lloyd* a player was convicted of assault because “what the appellant did had nothing to do with rugby football.” An appeal judge stated that while rugby is a physical game it is not a licence for thuggery⁸
- In *R v Marsh* a rugby player was convicted after an “off the ball” assault on an opponent⁹
- In a soccer case, *McCord v Swansea City AFC Ltd*, the court declared that if a player is injured as a result of play that goes beyond the rules (for example, an intentional foul tackle), the club or the aggressor can be made to pay compensation¹⁰

stopped the fight, would go beyond what has been consented to. But boxing is different from these other contact sports. Physical contact in rugby or soccer, however risky, is not intended to cause injury. The rules seek to minimise risks of injury. Boxers, by contrast, do not breach any rules when they try to cause injury. The British Boxing Board of Control makes this quite clear in its submission to the Law Commission¹¹: “Nobody can take part who is not licensed, and all who wish to box are warned of the risks of the sport and are given thorough medical examination and tests. There are at least two medical officers present at each promotion who are conversant with sports medicine and boxing. There is a referee in the ring who has had considerable training to enable him to identify the circumstances in which to stop a contest to avoid injury. There is also an ambulance present at each promotion which is staffed by paramedics with instructions to go to a named hospital.” The submission goes on to point out that an anaesthetist is present at the ringside. In the same evidence the board claims that scoring points is the objective of the match, not an injury, but concedes that a person who is knocked out cannot score any further points.

How have the courts dealt with this difference between a sport where injury is incidental and one where it is deliberate? The answer is that they have not really considered the point. Three landmark English cases which show the development of the judges’ attitude to boxing are summarised in the box. Frustratingly, none of these cases actually concerned boxing, which means that the judges were making non-binding statements about the law, having heard no evidence or argument relating to boxing itself. Pronouncements of this sort are called *obiter dicta* and are not, in theory, binding in future cases. Only one of the cases even uses the word “boxing.” Yet these are the cases generally considered to prove that boxing cannot be a criminal offence.¹²⁻¹⁴

The box shows that consent cannot make legal something that, on public policy grounds, should not be happening at all. The judges do not approve of 19th century prizefighting, street brawling, and sadomasochistic pleasures in private. They approve, without defining or considering these activities, of “sparring” (1892), “properly conducted games” (1981), and “boxing” (1993).

Would the public policy approval be the same if modern boxing were subjected to the tests of the judges in the *Coney* case (box)? For example, another

of the judges (Mr Justice Cave) said: “A blow struck in anger or which is likely or intended to do corporal hurt, is an assault, but ... a blow struck in sport, and not likely to cause bodily harm, is not an assault.” A judgment in a relatively recent Canadian case is consistent with this rationale for distinguishing sparring from prize fighting. The case of *Pallante v Stadiums Pty Ltd*,¹⁵ suggests that if a fight moves from being a “test of skill” to being a “fight” (the difference being that in a fight blows are intended to cause injury) it becomes illegal.

We know—as do the British Boxing Board of Control—that boxing is likely to cause bodily harm. But the courts have not been asked to consider any scientific evidence as no case before them has actually involved boxing. Their pronouncements on boxing are therefore of little value. The Law Commission is currently working on redrafting the law on assault and

Landmark statements from the courts

- In *R v Coney*,¹⁵ the defendants chanced on a bare knuckle prize fight. They were convicted of aiding and abetting an illegal fight. They were acquitted on appeal because there was no evidence of the aiding and abetting. But was the fight itself illegal? The view of one of the judges (Mr Justice Stephen) on this is often cited: “The consent of the person who sustains the injury is no defence to the person who inflicts the injury, if the injury is of such a nature, or is inflicted under such circumstances, that its infliction is injurious to the public as well as the person injured. But the consent of the parties to the blows which they mutually receive does not prevent those blows from being assaults ... in cases where life and limb are exposed to serious danger in the common course of things, I think that consent is a defence to a charge of assault, even where considerable force is used, as, for instance, in cases of wrestling, single-stick, sparring with gloves and the like; but in all cases the question whether consent does or does not take from the application of force to another its illegal character is a question of degree depending upon circumstances.” No attempt was made to define “sparring”
- In Attorney General’s reference No 6 of 1980, two men agreed to a street fight. At first they were acquitted because they had consented to assault each other.¹⁶ However, the Court of Appeal ruled that despite consent the fight was a crime if the intention was to inflict injury. Lord Lane went on to say, again without mentioning the word boxing: “Most fights will be unlawful regardless of consent. Nothing which I have said is intended to cast doubt on the accepted legality of properly conducted games and sports, lawful chastisement or corrections, reasonable surgical interference”
- In *R v Brown and others*, the defendants engaged, in private, in sadomasochistic activities such as piercing each other’s genitals.¹⁷ The House of Lords ruled that consent was irrelevant because these activities are contrary to public policy.¹⁸ Lord Templeman said that injurious activities are lawful if the injured person consents and the activity itself is lawful, and he continued: “Even where violence is intentionally inflicted and results in actual bodily harm, wounding, or serious bodily harm the accused is entitled to be acquitted if the injury was a foreseeable incident of a lawful activity in which the injured person was participating.” He cited ear piercing, circumcision, and violent sports, including boxing, as examples of what is lawful

consent, but since it has refused to make any recommendations on boxing, its draft legislation legitimating boxing cannot be considered as persuasive. "We do not think it would be helpful for us to add to the already formidable public debate on the issue."²⁰ It too has not considered the scientific evidence. However, its proposed reformulation of the law would be stark and realistic. In a statute recognising the legality of boxing "it will be necessary specifically to provide in any such legislation that it is not criminal to kill or intentionally severely injure another person in the course of a boxing bout."²⁰

Research on boxing and injury

There has long been acceptance that boxing causes injuries. Acute brain injury is regularly reported in the press and a large body of research has been conducted on possible longer term chronic brain damage as a result of repetitive blows to the head. A Medline search from 1969 onwards, using the term "boxing" with snowballing search techniques, identified several studies examining neurological damage in boxers. In none of these studies did the design allow more than measures of association to be inferred. They measured different outcomes ranging from radiological appearances and neuropsychological tests to biochemical measures of blood brain barrier integrity (these are shown in the table on our website). Three of six prospective studies reported abnormalities in the boxers at baseline or follow up, six out of eight case-control studies showed damage, and abnormalities were evident in 12 of 14 cross sectional studies and four out of five case series. Thus all groups of studies provided evidence of neurological damage associated with boxing. Thirteen of the studies included professional boxers, but, more alarmingly, 27 included amateurs. Thus, the argument that amateur boxing is safer than professional boxing is challenged, particularly since far more people at younger ages are being exposed.

Could an injured boxer sue?

A recent case shows that organisers of sporting events must take proper steps to ensure the safety of participants.²¹ The logic of such a duty is that participants, while consenting to some risks, have not consented to referees or promoters disregarding their safety. Mr Smoldon, the plaintiff, broke his neck in a collapsed rugby scrum and is now paraplegic. In *Smoldon v Whitworth* he sued the referee. Although it was an opposing player who kept collapsing the scrums, the court decided the referee had a duty to protect the player's safety in a situation where he should have known that intervention was necessary.

This ruling has caused clubs and referees to review their standards and their insurance arrangements. Boxing promoters are now on notice that to ignore known safety risks exposes them to compensation claims from boxers or their widows. A possible case could involve a claim against a referee who fails to stop a match when one of the participants is showing injury or fatigue.

Professional boxers have already publicly indicated that standards are inadequate. A headline in the *Guardian* of 27 February 1995, for example, states: "Big

fight injury prompts attack on safety claim. Professional Boxers' Association attacks safety standards." While the organisers would not be sued for assault, they could be sued for negligence, in the same way as a doctor who fails to follow acceptable standards. "I didn't know the risk" is a good defence only if the evidence suggests a reasonably competent boxing promoter would not have been aware of the risk.

Conclusion

It is accepted as if fact that boxing is legal. A reading of the judgments on which this view is based shows that pronouncements on the legality of organised fighting have been based on public policy. The justification, when attempted, has been on the grounds that properly organised fights are not intended or likely to cause injury. Analysis of law and science has been superficial or non-existent, for the straightforward reason that there has been no test case. We have so far touched on two possible test cases, both of which could be considered in the event of a fight involving serious injury or death:

- A claim for compensation against the promoter or referee on the ground that risks of injury were not properly minimised
- A criminal prosecution in which the known scientific evidence would be presented to the courts
- Both possibilities would require the cooperation of witnesses from the medical profession, but would not be initiated by them.

There may be a third option. Professional boxing events, as we have seen above, require doctors at the ringside and emergency services on standby. A promoter who fails to organise medical cover would be open to legal proceedings by an injured boxer or his personal representatives. The withdrawal of medical cover would, without legislation, make professional boxing impossible. The profession could reconsider, in the light of its own ethical standards, participation by its members in boxing promotions.

Funding: None.

Conflict of interest: None.

- 1 Dillner L. Boxing should be counted out, says BMA report. *BMJ* 1993;306:1561-2.
- 2 *R v R* [1992] AC 599.
- 3 *Bland v Airedale Health Trust* [1993] 1 FLR 1026.
- 4 *Prohibition of Female Circumcision Act*. London: HMSO, 1985.
- 5 *A & B v UK* [1996] FCR 569.
- 6 *R v Brown and others* [1993] 2 All ER 116.
- 7 Grayson E. *Sport and the law*. 2nd ed. London: Butterworth, 1994.
- 8 *R v Lloyd* (1989) Cr App R 36.
- 9 *R v Marsh* (1994) Crim LR 52.
- 10 *McCord v Swansea City AFC Ltd*. *Times* 1997 Feb 11.
- 11 Law Commission consultation paper 139 (1995) para 12.34.
- 12 Law Commission consultation paper 134 (1994).
- 13 Law Commission consultation paper 139 (1995).
- 14 Gunn M, Ormerod D. The legality of boxing. *Legal Studies* 1995;15:181.
- 15 *R v Coney* (1892) 8 QBD 534.
- 16 Attorney-General's Reference (no 6) of 1980 [1981] 1 QB 71.
- 17 *R v Brown and others* [1993] 2 All ER 116.
- 18 An appeal to the European Court of Human Rights based on the right to privacy failed—*Lasky and others v UK*. *Times* 1997 Feb 20.
- 19 *Pallante v Stadiums Pty Ltd* (no 1) [1976] VR 33.
- 20 Law Commission consultation paper 134 (1994) para 2.9.
- 21 *Smoldon v Whitworth*. *Times* 1996 April 23.

(Accepted 27 February 1998)

Managing demand

A patient led NHS: managing demand at the interface between lay and primary care

Anne Rogers, Vikki Entwistle, David Pencheon

This is the second of five articles on ways of managing demand for health care

National Primary Care Research and Development Centre, University of Manchester, Manchester M13 9PL

Anne Rogers, reader in sociology

NHS Centre for Reviews and Dissemination, University of York, York YO1 5DD

Vikki Entwistle, research fellow

Institute of Public Health, University Forvie Site, Cambridge CB2 2SR

David Pencheon, consultant in public health medicine

BMJ 1998;316:1816-9

People currently deal with many, if not most, health problems without consulting the health service. Relatively small decreases in these self care behaviours or increases in the accessibility of services could produce large changes in demand for formal care. We believe that scope exists for the health service actively to promote self care and improve the way it responds to people's illnesses so that needs are met efficiently in appropriate and acceptable ways. This may mean both encouraging demand for some forms of care—for example, for problems where early intervention is desirable—and promoting self care for other problems. We examine particularly how the NHS should support self care as a way of managing the demand for formal health care.

Patterns of self and informal care

Informal and self care constitute an important but often hidden aspect of the supply of health care. Ordinary people are providers of care. They have experience of caring for themselves and others and regularly provide advice about, and take responsibility for, matters of health and illness.¹ The extent and nature of available social networks affects levels of both advice and informal support.² Self care can act as both an alternative and a supplement to formally provided care.³ Once people have recognised their symptoms they have the following range of options before and beyond seeking a professional consultation.

Doing nothing about symptoms may be unwise neglect, but it may also be a positive, appropriate, and logical first response to an illness,⁴ both acute-temporary and long term.⁵ A subsequent decision to act tends to be precipitated by the actions or advice of others or a change in the assessment of risk or the situation, or where the containment of illness is no longer possible.⁶

Self care without medication includes a wide range of practices including changing diet, using home appliances like massage pads, taking homemade remedies, starting an exercise regimen, rest, having a holiday, staying at home, and reducing (or increasing) regular activities. The type and degree of self care is influenced by social, economic, and psychological resources and attitudes and knowledge about health and illness.⁵ Older people use traditional home remedies more than younger people,^{7, 8} while homeopathic and herbal medicines have grown in popularity among 30-45 year olds.⁸ Different and a wider range of practices are evident among some ethnic groups. For example, Jesson et al found that Afro-Caribbean respondents were more likely than Asian respondents to use traditional remedies and older respondents were more likely to use them than younger ones.⁹

Summary points

Knowledge, culture, attitudes, experience, and healthcare organisation are the key determinants of when, why, and how people access formal health care.

To ensure the most appropriate demand on the health service, the NHS needs to encourage some demand and promote alternative ways of managing other demand.

This can be done by building on the ways in which people already take responsibility for managing their health and illness

Information that is relevant, accessible, meaningful, and integrated with other formal care is important

So is a culture in which risk, responsibility, control, and uncertainties can be discussed and shared between providers, funders and users

More graduated access to the system should be offered, through a single point of entry-triage

Self care with medication is an important part of self care. Sales of non-prescribed, over the counter, medications in 1994 were the equivalent of one third of the NHS drug bill and were used to treat one in four symptoms.¹⁰ Homeopathic and herbal preparations are an increasing source of self medication for both acute and chronic conditions, and international trends towards deregulation of prescription only to over the counter medicines have increased the potential for lay choice in symptom treatment. Over the counter medications can reduce the need for primary care consultation, as, for example, with vaginal antifungal treatments.¹¹ The increasing availability over the counter of other medicines, such as antihistamines and H₂ antagonists, and of home testing kits will probably reinforce self care actions by some groups.

Some health professionals are worried that self and informal care may be inappropriate. Many working in the NHS fail to recognise and respond to the growing popularity of alternative therapies and may be unfamiliar with the rationales underpinning care that is not based on biomedical principles. A better understanding of the contribution of these types of care may help us develop better ways of managing demand.

Access and organisation of services

Primary care services (including accident and emergency departments) are most influenced by patients' decision making about when and how to access services. The organisation of primary care and the way patients make decisions strongly influence each other. Access to services is affected by many things: proximity to services with respect to social resources such as transport and child care¹² and financial resources (for those who cannot afford an over the counter drug a consultation is a means of getting it free¹³).

Accessibility is also related to how health care services are organised. For example, patients attending singlehanded practices are more likely to consult than those attending group practices.¹⁴ The availability and type of appointment system also influences service use. The perception of difficulties in obtaining appointments influences people's use of primary care services, and for these reasons, some people may choose to use an accident and emergency department.¹⁵ Different ways of offering same day access to general practitioners may prevent the need to access care out of hours,¹⁶ and some British general practitioners are even starting to offer an email query service or a dedicated period each day when they are available for telephone consultations.

Previous experience of illness and service use

Previous experience of services also influences subsequent demand and help seeking behaviour. The familiarity of symptoms, familial and personal history of illness, and experience of identifying and managing illness all form a backdrop to lay action and may affect the timing and type of self care and help seeking. Additionally, assessments of what can and cannot be done about a problem are based on people's prior service contacts and those of their friends and relatives. Patients and informal care givers learn over time how to fit into what health professionals require of them. They get a sense of what doctors consider to be legitimate illnesses and the way in which illness is responded to by health professionals feeds back into how illnesses are subsequently perceived and managed.¹⁷

The combination of personal knowledge and the way primary care is made available may limit the control people feel they have over their ability to delay seeking formal care or to self treat common ailments. Good evidence exists that prescribing antibiotics for sore throats does little to alleviate symptoms—but it does enhance belief in the efficacy of antibiotics and make patients more likely to consult again.¹⁸

Conversely, unsatisfactory contacts with services, such as unsympathetic or fatalistic professional attitudes, may exacerbate patients' needs. While some patients who have been told that their problem cannot be treated may become reluctant to use services again for that problem, others may consult more in an attempt to resolve their problem.¹⁷

What can be done?

The role of information

People's views about self care and consulting behaviours are significantly influenced by their understanding of:

- the causes, symptoms and outcomes of illness;
- the roles and capabilities of different healthcare providers (including themselves);
- the general processes and outcomes of different ways of prevention, diagnosis, and treatment;
- the local availability of, and access to, services.

Information has an important role in making people aware of the healthcare options available and helping people appraise how best to help themselves. Many health care funders and providers now produce leaflets and advertisements to persuade people to adopt particular patterns of health care use (see box).

The motivations of information producers vary, as do their views of what constitutes appropriate self care and consulting behaviour. An increasing number of information campaigns aim to influence demand on primary care services. In the context of limited resources and a drive towards clinical effectiveness, many promote self care for minor conditions and encourage people to seek professional advice if they have symptoms of serious conditions or those for which effective treatments are underused. However, few of these campaigns have been rigorously evaluated. People are exposed to many competing and often inconsistent messages from diverse sources (see box). Also people vary in the way they interpret information about health care because

Examples of information intended to influence self care in the UK



When should I call the doctor? Getting the most from your local GP services

This leaflet was produced by North Yorkshire Health Authority and distributed to all households. It covers various common health problems, giving suggestions for self care and indicating which symptoms warrant contacting a doctor or the emergency services. It tries to discourage use of out of hours services for non-urgent problems without dissuading people from contacting their doctors in real emergencies.

How to work with your doctor

The Royal College of General Practitioners led the production of this series of leaflets: *How the family doctor service works*; *You and your GP during the day*; *You and your GP at night and weekends*; *Coping with minor ailments*; and *Getting the most from your pharmacist*. The leaflets aim "to help people understand how the family doctor service works and enable them to get the best health care from their general practitioner."

Heavy periods? You can get help

A leaflet produced by Buckinghamshire Health Authority and other local agencies. It emphasises that heavy menstrual periods are common and that there are treatments that can help (hormonal and non-hormonal drugs, and surgical options). It encourages women with heavy periods to discuss the problem and the treatment options with their doctor.

Sources of health information that may influence help seeking behaviour

Family, friends, work colleagues, acquaintances
 Community leaders, local people recognised as sources of health related advice
 Self help groups and voluntary organisations
 Consumer health information and advice services
 Telephone help lines and high street and hospital information points
 Health food retailers
 High street pharmacists
 Healthcare providers outside the official healthcare system (acupuncturists, chiropractors, herbalists, homeopaths, osteopaths, spiritual healers)
 Healthcare providers within the official healthcare system (dentists, doctors, healthcare assistants, homeopaths, nurses, occupational therapists, physiotherapists)
 Individuals associated with healthcare providers (relatives and friends of health professionals, medical receptionists)
 Pharmaceutical companies
 The media (news items, specialist health features, advice columns or programmes, health related episodes in dramas and soap operas)

they attach different meanings to language and symbols and understand illness within different belief systems. The credibility of information may be affected by the extent to which it fits with prior experiences of illness and health care and by opinions about the information producers.¹⁹ Moreover, getting good quality information to people as they face decisions about self care and consultation remains a challenge. Some of the organisations that produce consumer health information materials have narrow viewpoints or vested interests and do not always provide balanced information about the full range of relevant health care options.²⁰ For example, leaflets produced by the pharmaceutical industry about prevention of heart disease may tend to emphasise the role of cholesterol; those produced by medical professionals about back pain may ignore the potential of osteopathy; those produced by mental health consumer groups with an antidrug bias may downplay the value of antidepressants.

However well produced, information is not the sole means of influence on help seeking behaviour. Providing people who consult about a common condition with information about the condition and the time it usually takes to recover from it may reduce the rate of consultation,²¹ but the detailed self care manuals produced by health maintenance organisations in America have had only a modest impact on the use of services. As well as information, changes in the pattern and delivery of services are needed as a means of better managing demand. Both information and services need to be more specifically orientated to the way in which people actually assess the need for care and the resources they have available to manage illness.

Changing professional-patient relationships

The model of health care in which knowledgeable and skilful doctors make decisions on behalf of their patients is being increasingly criticised,²⁰ and more patient centred models of care in which patients play an important role in decisions about their treatment are becoming the norm.²² Doctors are now expected to share their knowledge (and ignorance and uncertainty) with patients, some of whom are already well informed about symptoms, diagnoses, and treatments. People vary in their response to attempts to share information,

uncertainty, and decision making responsibility. Moves to encourage shared decision making between health professionals and patients may reinforce self care efforts and promote better use of both informal and formal healthcare services among some people. In others, however, such moves may increase anxiety and reduce confidence in both the individual and health professionals. Judging the extent of sharing information, uncertainty, and decision making responsibility which will best suit each individual is a major challenge in consultations.

Managing expectations

Satisfaction with a service depends on the degree of match between expectation and reality. Demand for publicly funded health care is never likely to be managed satisfactorily until we are explicit about how we decide what is funded, and for whom. Unless the issues are debated openly and communicated explicitly, people will understandably be unaware of what the NHS can and should provide. Being explicit about what is cost effective and available is clearly an important part of managing expectations (and thus demand).

Offering graduated access

Internationally the low cost of primary care in Britain and its open access are envied. However, the present configuration of services is not necessarily the most effective or appropriate way of meeting need. Out of hours visits by general practitioners are a particular point of tension where people are increasingly being told they must not call out the doctor "inappropriately" and are being made to feel guilty about the use of such services. At the same time doctors are seeking ways of reducing their commitment to providing out of hours care as a way of reducing their overall workload.

The most notable feature about the current system is the lack of a graduated service. A worried parent of a child with fever could be served by many other services before a doctor visiting the home is needed. There is a role for explicit self care manuals which are closely integrated with easily accessible advice and support over the phone. The next level of access might be a visit to the out of hours centre to see a nurse practitioner. Other ways of developing graduated access might be to build on the community pharmacy.¹³ Opening other direct access points and encouraging the development of mutual support and self help groups (perhaps based in primary care buildings) could also provide alternative sources of advice that form part of a system of graduated access from the informal to the formal healthcare sectors. This might form part of the commissioning and providing strategy of primary care groups and local health improvement programmes outlined in the recent white paper for England.²³

If they are to be effective, graduated levels of access need to be based on models of service that are sensitive to people's needs and acknowledge that people's use of services is shaped over time. Meeting unmet health need as part of a positive demand management strategy also requires ensuring that resources and services are targeted at disadvantaged groups. Thus the introduction of a graduated approach to services must recognise the dangers of exacerbating or failing to address existing inequalities. For example, differences have been found in the nature and quality of advice

giving provided by community pharmacies operating in different localities.²⁴ The needs of black and other ethnic minority groups will also need to be taken into consideration in the development of telephone advice lines such as "NHS Direct."²⁵

Conclusion

Managing demand better at the interface between the public and the NHS will require three things:

- *Integrated information* about self care closely integrated with health care;
- *Graduated access*
- *Shared control*—a willingness from both professionals and patients to share control, risk, responsibility, information, and decision making.

The last point requires a recognition of the responsibilities that people already have for their own health care and of the unequal resources that people have available to be able to respond to and manage illness.

With special thanks to Philip Hadridge.

- 1 Stacey M. 'Who are the health workers? Patients and other unpaid workers in health care'. *Economic and Industrial Democracy* 1984;5:157-84.
- 2 Dean K. Social support and health: pathways of influence. *Health Promotion* 1986;2:133-50.
- 3 Fleming GV, Giachello AL, Andersen RM, Andrade P. Self-care: substitute, supplement or stimulus for formal medical care services? *Med Care* 1984;22:950-66.
- 4 Eyles J, Donovan J. *The social effects of health policy: experiences of health and health care in contemporary Britain*. Aldershot: Avebury, 1990.
- 5 Dean K. Lay care in illness. *Soc Sci Med* 1986;22:275-84.
- 6 Alonzo A. An illness behaviour paradigm: a conceptual exploration of a situational-adaptation perspective. *Soc Sci Med* 1984;19:499-510.
- 7 Blaxter M, Patterson E. *Mothers and daughters*. London: Heinemann, 1982.
- 8 Elliott-Binns C. An analysis of lay medicine: fifteen years later. *J Roy Coll Gen Pract* 1986;33:256-8.

- 9 Jesson J, Jepson M, Pocock R, Sadler S, Dunbar P. *Ethnic minority consumers of community pharmaceutical services*. Birmingham: Aston University Pharmacy Practice Group and Social and Consumer Research Unit, 1994:66-7.
- 10 Blenkinsopp A, Bradley C. Patients, society and the increase in self-medication. *BMJ* 1996;312:629-31.
- 11 Gurwitz JH, McLaughlin T, Fish S. The effect of an Rx to OTC switch on medication prescribing patterns and utilization of physician services. The case of vaginal antifungal products. *Health Serv Res* 1995;30:672-85.
- 12 Pearson M, Dawson C, Moore H, Spence S. Health on borrowed time? Prioritising and meeting needs in low income households. *Health Soc Care Community* 1993;1:11-68.
- 13 Hassell K, Noyce P, Rogers A, Harris J, Wilkinson J. A pathway to the GP: the pharmaceutical 'consultation' as a first port of call in primary health care. *Family Practice* 1997;14:498-502.
- 14 Hopton J, Dlugolecka M. Need and demand for primary care: a comparative survey approach. *BMJ* 1995;310:1369-73.
- 15 Shipman C, Longhurst S, Hollenbach F, Dale J. Using out of hours services: general practice or A & E? *Fam Pract* 1997;14:503-9.
- 16 Ancut B, Winters M. Linking customer judgements with process measures to improve access to ambulatory care. *Joint Commission Journal on Quality Improvement* 1996;2:345-57.
- 17 Rogers A, Hassell K, Nicolaas G. *Demanding patients? Analysing primary care use*. Buckingham: Open University Press (in press).
- 18 Little P, Williamson G, Warner G, Could C, Gantlet M, Kinmonth AL. Open randomised trial of prescribing strategies in managing sore throat. *BMJ* 1997;314:722-7.
- 19 Frewer LJ, Shepherd R. Attributing information to different sources: effects on the perceived qualities of information, on the perceived relevance of information and on attitude information. *Public Understanding of Science* 1994;2:112-21.
- 20 Coulter A. Partnerships with patients: the pros and cons of shared clinical decision-making. *J Health Serv Res Policy* 1991;2:112-21.
- 21 Macfarlane JT, Holmes WF, Macfarlane RM. Reducing reconsultations for acute lower respiratory tract illness with an information leaflet: a randomised controlled study of patients in primary care. *Br J Gen Pract* 1997;47:719-22.
- 22 Laine C, Davidoff F. Patient-centred medicine: a professional evolution. *JAMA* 1996;275:152-6.
- 23 Secretary of State for Health. *The new NHS*. London: Stationery Office, 1998.
- 24 Rogers A, Hassell K, Noyce P, Harris J. Advice giving in community pharmacy: variations between pharmacies in different locations. *Health and Place* (in press).
- 25 Free C, McKee M. Meeting the needs of black and minority ethnic groups. *BMJ* 1998;316:380.

Health needs assessment

Assessing health needs in developing countries

John Wright, John Walley

In most developing countries, the evolution of health services has been dominated by Western models of health care. These have rarely taken into account how local people explain illness, seek advice, or use traditional healing methods. The emphasis has been on hospitals and curative care rather than on trying to address local health needs equitably and effectively. Since the Alma Ata declaration on primary health care, more attention has been given to increasing coverage of basic services and preventing common diseases. However, the bias in resource allocation towards secondary care and urban areas remains.

Health needs are changing and new challenges from chronic diseases and HIV infection must be faced. Better coverage of preventive and essential healthcare services has led to greater emphasis on improving the quality of health care and ensuring that the most efficient use is made of scarce resources. For example, infant mortality has fallen dramatically in the past two decades through interventions such as oral rehydration for diarrhoea and immunisation programmes. With fewer children dying there has been

Summary points

Timely and accurate information is essential if health services in developing countries are to meet the needs of their populations

Routine health information can provide an epidemiologically based assessment of ill health and identify what health services are needed

Community appraisals can provide valuable insight into patients' needs as well as empowering communities

Emergency health needs are similar whatever the disaster. Community involvement, good surveillance, and foresight are important

The global burden of disease can be represented by disability adjusted life years; these can help to identify international health needs

This is the last in a series of six articles describing approaches to and topics for health needs assessment, and how the results can be used effectively

continued over

BMJ 1998;316:1819-23

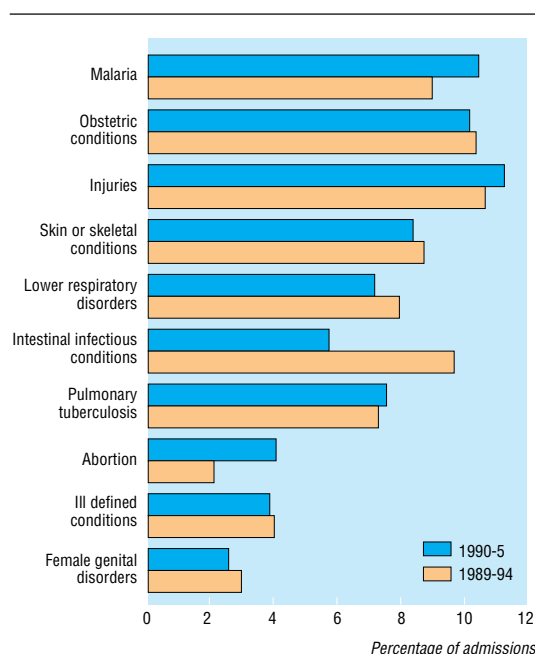
Nuffield Institute for Health, University of Leeds, Leeds LS2 9PL

John Wright, consultant in epidemiology and public health medicine

John Walley, senior lecturer in international public health

Correspondence to: Dr Wright
wrightj@brihosp.mhs.compuServe.com

Series editor: John Wright



Top 10 causes of admission over five years, all hospitals, Mashonaland Central Province, Zimbabwe. Figures exclude normal deliveries, which comprise 27% of admissions in 1995 and 25% in 1994

greater emphasis on the need to tackle the causes of infant and child morbidity. Families can be smaller, and this has highlighted the need improve the availability of family planning.

If health services are to respond to the changing health needs of their local populations, then planners and managers need useful and timely information about the health status of these populations. Some of this information can come from routine data sources or may be collected from large, one-off population studies. Some information can be obtained from community surveys.

Routine information

Information about diseases or use of health services can help to build up a picture of the health needs of a local population.¹ Such epidemiological information can come from national, regional, or local sources.

- National census data can provide information on the age and sex distribution of a population. This information can be used to calculate crude birth rates and fertility rates
- Death certification and registers can provide information on the cause and place of death. Infant mortality rates can be calculated from the number of liveborn infants who die in the first 12 months of life
- Hospital inpatient records can be used to obtain numbers of admissions, cause of admission, and length of stay, and outpatient consultations can be used for numbers of patients and diagnoses (figure)
- Disease notification systems can provide information on important infectious diseases
- Maternity unit statistics can describe births rates, maternal ages and parity, numbers of low birthweight (< 2500 g) babies, and maternal mortality
- Pharmacy information provides information on the use of essential and non-essential drugs

- Laboratories can provide information on the appropriate use of tests and numbers of positive tests (for example, sputum samples for pulmonary tuberculosis, malaria blood slides)
- Workplaces can provide data on absences due to sickness, occupational injuries, and regular employment health checks.

This information provides a snapshot of a population's health—but without comparative information this will be of limited use in planning health services. Comparison can be with other populations (national or regional) or with the same population over time.

The disadvantage of routine information is that it is often inaccurate, incomplete, and out of date. For example, outpatient records may give only the main complaint of patients attending and may not distinguish new patients' visits from repeat visits. Notifiable diseases may be missed, and when they are picked up they are often not reported. It is also difficult to make generalisations about a local population from routine data. For example, people who attend a hospital are more likely to reflect a more affluent and urban population. One-off studies can provide more detailed, relevant, and accurate information on a specific topic (box) but are time consuming and costly.

Community appraisals

Community appraisals describe approaches to needs assessments that emphasise involvement of local people. A confusing number of terms describe similar methods: rapid evaluation methods, rapid appraisal methods, rapid community surveys, rapid rural appraisal, relaxed rural appraisal, participatory rural appraisal.³⁻⁷ The development of rapid appraisal

Combining different methods of needs assessment²

Bacterial and tuberculous meningitis is an important cause of morbidity and mortality in developing countries despite the availability of effective treatment.

Epidemiological assessment—A national study was undertaken in Swaziland to describe the epidemiology, clinical features, and outcomes in each case of meningitis admitted to hospital. The overall case fatality was found to be 42% in all ages and 63% in adults. Significant association with a period of drought was found, and the increasing contribution of HIV infection was highlighted. The results also identified the age distribution and aetiology of meningitis in the country and allowed an assessment of the potential impact of immunisation programmes.

Community appraisal—Semistructured interviews were carried out on a random sample of mothers attending a health centre. These were used as the basis of a focus group discussion with a purportedly selected group of health workers. The need for education about the awareness of symptoms and the importance of prompt referral and treatment was identified.

Action—To reduce the high mortality from meningitis by reducing delays in treatment, a coordinated education campaign for the public and health workers, using posters and outreach teaching sessions, was undertaken.

methods during the 1980s came in recognition of the time consuming and rigid nature of traditional epidemiological and questionnaire surveys. Experience with these appraisal methods showed that when they were done well they provided valuable, reliable, and timely information on health status, knowledge, attitudes, and behaviours. More recently, emphasis has been placed on encouraging people to participate in their own appraisal (for example, participatory rural appraisal).³⁻⁵ Many of the principles behind these techniques stem from the formative work of Paulo Freire in enabling oppressed people to understand and address their own educational needs.⁸

In community appraisals the assessors support and facilitate community understanding and action rather than just record information (see box above for example of one programme). Local communities can be empowered by the opportunity to participate in health planning, and health workers have the opportunity to appreciate the perceived strengths and weaknesses of services.

The information collected in community appraisals is used to develop acceptable and sustainable programmes in partnership with the community. These may be programmes of health care, nutrition, or family planning that improve services for the community. The same methods can be used to monitor and evaluate the developments.

Whatever method is used for appraisals, the emphasis is on qualitative techniques of interviewing and listening to people.⁹ Methods of community appraisal include the following:

- Summarising existing information from routine sources or previous surveys (for example, causes of morbidity and mortality)
- Exit interviews after a clinic visit to obtain the patient's perspective on the quality of care and understanding of the health messages received (for example, checking that the mothers of children with diarrhoea understand how to make up oral rehydration solution)
- Interviews with health workers (for example, to assess people's perception of local needs, interviews can be structured with a standard list of questions, or semistructured, with just a list of topics that need to be covered)
- Ranking of priorities or preferences (for example, asking local people to produce a "league table" of needs)
- Case note review and audit (for example, examining the recording of tasks and health education given to patients)

Steps in community appraisal

- Define aims of appraisal
- Identify community for assessment
- Identify study team and train in qualitative techniques
- Examine available information
- Define key questions and issues
- Pilot questions in interviews or questionnaires
- Identify key informants
- Choose and use appropriate methods
- Analyse information after each interview
- Write report and develop action plan

Community appraisal: an example

Factors affecting participation in nutrition, health, and development in commercial farms in Zimbabwe⁹

The workers and their families on commercial farms are one of the most disadvantaged groups in Zimbabwe. A farm health programme has been operating for 15 years in Mashonaland Central Province, including child health and preschool and nutrition activities. As malnutrition in children under 5 remains more common on the communal farms than elsewhere, a better understanding of the factors influencing nutrition, health, and development is needed.

Eight farms, ranging from well developed to underdeveloped, were selected. Permission of each commercial farmer was requested by telephone and followed up by an explanatory letter delivered by hand. On each farm the commercial farmer or representative was interviewed.

Participants for group discussions were recruited randomly among workers with preschool children, aiming for 6-8 female workers, 6-8 permanent male workers, and 6-8 seasonal workers. Anyone who seemed to hold some kind of authority was tactfully removed from the group discussion by asking them to assist in drawing the social map, which was drawn on the ground and then copied.

The research investigated:

- Knowledge, attitudes, and practices relating to health
- Felt needs, priority problems, opportunities, and solutions
- Factors affecting communication
- Factors affecting participation in health activities
- Factors likely to assist or hinder an intervention programme.

Results

Children's nutrition was not viewed as a priority problem by farm workers or farm owners. Farm workers gave poor working conditions, working hours, low salaries, and lack of family food as priorities; health care for children came much lower on the priority rankings.

The workers are a fragmented community with no sense of belonging to a group. There is tension between permanent workers, who have better conditions, and seasonal workers.

An unhealthy child is described as dirty, sick, thin, eats cold food and has a pot belly, and is miserable. Contributory factors include parental fighting, inadequate food, sickness, and lack of child care at home or at preschool.

Issues likely to influence negatively participation included *zvondo*—jealousy and mistrust among women: for example, not organising a cooking roster for the preschool, as they don't want the woman whose turn it is to cook to benefit from the food. Another example is poor response by the commercial farmer to efforts to improve workers' health—once the toilet pits were dug, the farmer failed to provide cement and a builder to finish the job.

- Household survey to assess family health needs (for example, seasonal variation in food intake and accessibility to clean water)
- Focus group discussion to obtain the opinions of a specific population group (for example, a facilitator guides the group of purposefully selected informants through a framework of questions that aim to stimulate discussion and communication of opinions; an assistant takes notes of the discussion for later analysis)
- Direct observation of chosen indicators or behaviours (for example, the performance of health workers in communication or clinical skills).

The assessors need to have good listening skills, a recognition that communities know their own needs, and common sense in analysing the results. Some training is necessary to provide the assessors with the skills needed to undertake appraisal techniques and generate good quality, reliable findings. They must beware of generating false hopes in the community for what can be achieved.

The choice of subjects for questionnaires or interviews will determine whether the results can be generalised. This sampling can be done randomly, sys-

People oriented planning

The United Nations High Commission for Refugees has developed a simple needs assessment tool called people oriented planning to help guide decisions about refugee needs:

- Which foods should be supplied, and to whom?
- How should they be distributed?
- Who should live where?
- What are the critical medical needs?
- What are the cultural patterns of health care?
- How are target groups best reached?

This is approached through an analysis of the refugee population profile, activities, and use of resources. Specific questions about the refugees help to clarify what activities people did (farming, teaching, social, political, house building) before their displacement, who did what and when.

tematically (every fifth house in a village, say), or by purposefully selecting key informants (people with expert knowledge: patients, mothers, sex workers, chiefs, elders, church leaders, shopkeepers, health workers, government officials). Care should be taken when selecting key informants that they reflect the range of different interest groups.

Ideally a combination of methods should be used when assessing health needs—for example, analysis of routine health data plus a questionnaire or focus group. This allows cross checking and validation of results, and it increases their relevance or generalisability to the study population. Routine population data can be superficial and inaccurate; however, they do allow a quantitative comparison with other population data. A small number of interviews may not provide opinions representative of the whole community but can show people's true priorities.

Language and literacy barriers may arise in discussion of complex health issues. Techniques to overcome these barriers in non-literate populations include community mapping, seasonal calendars, Venn (chappati) diagrams, and dramatisation tech-

niques.^{4,5} These visually based methods provide opportunities for local people to explore and analyse their needs in their own terms and enhance their involvement in the assessment.¹¹

Emergency needs assessment

Quick decisions and actions are imperative in the aftermath of a disaster. The immediate, life supporting needs after any major disaster are similar whether the cause is of gradual onset, such as drought, famine, or war, or sudden onset, such as floods or earthquakes. These include clean and adequate water and sanitation; adequate food rations; shelter—including clothing and blankets; and essential medical care.¹² Information must be obtained not only from government or other agencies (including, increasingly, the international media) but from the affected community. This community will have the capacity to help itself, and any disaster response should build on this.

Involving the community is essential in assessing the effects of the disaster and targeting vulnerable groups (young children, elderly people, pregnant women). It is also vital to avoid cultural problems. Some problems (such as sending pork products to Islamic countries) can be avoided with intelligence. Others require more insight: a famine relief programme ran into problems because the affected population, which was used to a staple of white maize, had strong traditional beliefs that the yellow maize being distributed was inedible and poisonous.¹³

In addition to considering immediate needs, it is important to plan for the future. A community dependent entirely on donor food supplies will be vulnerable when these are withdrawn, especially if normal food production is still disrupted. Good surveillance systems to monitor health and malnutrition are also vital. For example, anthropometric surveys of children in refugee camps or outreach clinics, measuring weight for height or upper arm circumference, can provide valuable nutritional assessments.¹² Monitoring of infectious diseases such as measles can prompt timely immunisations.

Global needs

National and international health needs are also important in planning health services. Most assessments of the relative importance of different diseases are based on how many deaths they cause. This convention has certain merits: death is an unambiguous event, and the statistical systems of many countries routinely produce the data required. There are, however, many diseases or conditions that are not fatal but that are responsible for great loss of healthy life: examples are chronic depression and paralysis caused by polio. These conditions are common, can last a long time, and often lead to considerable demands on health systems.

Global needs are represented by the global burden of disease. This burden of disease includes both morbidity and mortality. Morbidity can be assessed according to the amount of disability—for example, from blindness—and mortality can be expressed in terms of life years lost. The needs can then be expressed through a combined measure of such as the disability adjusted life year (DALY).¹⁴



JANE SMITH

Projected burden of ill health in the developing world*

Rank in 2020	Cause of death	Rank in 1990
1	Depression	4
2	Road traffic accidents	11
3	Ischaemic heart disease	8
4	Chronic obstructive pulmonary disease	12
5	Cerebrovascular disease	10
6	Tuberculosis	5
7	Lower respiratory infections	1
8	War	16
9	Diarrhoeal diseases	2
10	HIV/AIDS	—

*In 1990 measles and malaria were ranked sixth and seventh; "conditions arising during the perinatal period" were ranked third.

The proportion of disability and loss of life varies from disease to disease so there will be more disability due to leprosy but more years of life lost from tuberculosis. Overall the global burden of disease, when calculated as disability adjusted life years, is made up of about two thirds from years of life lost (mortality) and one third from disability (morbidity).

Disability adjusted life years can be used to rank diseases in order of magnitude of burden of disease in developing countries. The existing rankings can be compared with a prediction of the future.¹⁵ The table shows the scale of the demographic and epidemiological transition anticipated by 2020, with depression and traffic accidents predicted to be the biggest burdens of disease.

Disability adjusted life years should be interpreted with caution because of the assumptions that are made.¹⁶ For example, the combination of discounting and age weighting means that an infant's death equates with the death of a young adult. Disability adjusted life years are based on incomplete, internationally available data that may contain inaccuracies, and they are calculated on the basis of specific diseases or disease groups. Many diseases have multiple outcomes, and interventions may reduce the burden for more than one disease. For example, treatment of diabetes will reduce the risk of stroke, coronary heart disease, and renal failure.

To date, disability adjusted life years have been calculated globally and by WHO region. Attempts are being made to estimate the national disease burden, as in Ghana, but limitations in data make this a difficult task.

Medical information needs

As in developed countries, evidence of effectiveness is an essential component of needs assessment. Attempts are currently being made to improve access to research information and effectiveness information using the internet, including:

- UK Cochrane Centre (<http://www.cochrane.co.uk>)
- South African Cochrane Centre (<http://www.mrc.ac.za/mrcnews/march96/cochrane.htm>)
- International Network for the Availability of Scientific Publications (<http://oneworld.org/inasp/network.html>)
- Global Health Network (<http://www.pitt.edu/HOME/GHNet/GHNet.html>)

EpiInfo

EpiInfo is a software package developed by the Centres for Disease Control and Prevention in the United States. It allows easy questionnaire design (EPED), data processing, and analysis. The analysis module provides a user friendly statistical package. It is considered public domain and may be freely copied. Its simplicity and free availability make it ideal for researchers in developing countries. (Contact: Division of Surveillance and Epidemiologic Studies, Epidemiology Program Office, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, USA.)

Despite these limitations, disability adjusted life years are the only data available that combine morbidity and mortality into a simple indicator of burden of disease. This can be used to identify current and future international health needs and to plan essential national health services.¹⁷

Acting on the assessment

The hardest part of any needs assessment is translating the results into policies and practices that will provide beneficial change. The involvement of health workers in techniques such as rapid or rural appraisal will encourage changes at an individual level. Local workshops can provide an opportunity to review the lessons learnt with other health workers. If this change is going to be sustainable and adaptable then the appraisal should be a continuous process with ongoing feedback. Implementation of strategic changes can be facilitated if the policy makers themselves are active in the process.

We are grateful to Anthony Zwi for comments and advice, to Dr Aad van Geldermalsen for the figure, and to Margaret Haigh for secretarial support.

Funding: None.

Conflict of interest: None.

- 1 Vaughan JP, Morrow RH. *Manual of epidemiology for district health management*. Geneva: World Health Organisation, 1989.
- 2 Ford H, Wright J. The impact of bacterial meningitis in Swaziland: an 18 month prospective study. *J Epidemiol Community Health* 1994;48:276-80.
- 3 Cornwall A, Jewkes R. What is participatory research? *Soc Sci Med* 1995;41:1667-76.
- 4 Chambers R. *Rural appraisal: rapid, relaxed and participatory*. Brighton: Institute of Development Studies, 1992. (Discussion paper 311.)
- 5 Chambers R. Participatory rural appraisal (PRA): analysis of experience. *World Development* 1994;22:1253-68.
- 6 Rahman MA, Fals-Borda O. A self-review of PAR. In: *Action and knowledge: breaking the monopoly with participatory action research*. London: Intermediate Technology Publications, 1991.
- 7 Reynolds J. *Primary health care management advancement programme: assessing community health needs and coverage*. Geneva: Aga Khan Foundation, 1993.
- 8 Freire P. *Pedagogy of the oppressed*. New York: Seabury Press, 1968.
- 9 Adams L, Goche T, Marime W, Mungate B, Shamyayirira L. Report of participatory rural appraisal. Bindura: Mashonaland Central Province, 1996.
- 10 World Health Organisation. Rapid evaluation method guidelines for maternal and child health, family planning and other health services. Geneva: World Health Organisation, 1993.
- 11 De Koning K, Martin M. *Participatory research in health: issues and experiences*. Johannesburg: Zed Books, 1996.
- 12 Seaman J, ed. Disasters. *Tropical Doctor* 1991;21(suppl 1):38-42.
- 13 Wright J, Ford H. Another African disaster. *BMJ* 1992;305:1479-80.
- 14 World Bank. *World development report 1993: investing in health*. New York: Oxford University Press, 1993.
- 15 Murray C. *Investing in health research and development*. Geneva: World Health Organisation, 1996.
- 16 Barker C, Green A. Opening the debate on DALYs. *Health Policy and Planning* 1996;11:179-83.
- 17 Bobadilla J-L, Cowley P, Musgrove P, Saxenian H. Design, content and financing of an essential national package of health services. *Bull World Health Organ* 1994;72:653-6.

These articles have been adapted from *Health Needs Assessment in Practice*, edited by John Wright, which will be published in July.